APPENDIX A
Laboratory Data Deliverables Formats

I. Full Laboratory Data Deliverables - USEPA/CLP Methods

Full laboratory data deliverables for USEPA/CLP analyses may be requested when the following Statements of Work are employed:

"USEPA Contract Laboratory Program Statement of Work for:"

A) "Organics Analysis, Multi-Media, Multi-Concentration"

B) "Inorganics Analysis, Multi-Media, Multi-Concentration"

C) "Organics Analysis, Multi-Media, High-Concentration"

D) "Inorganics Analysis, Multi-Media, High-Concentration"

E) "Low Concentration Water for Organic Analysis"

F) "Low Concentration Water for Volatile Organic Analysis"

G) "Low Concentration Water for Inorganic Analytes"

H) "Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans"

The Full laboratory data deliverables required for USEPA/CLP analyses are listed in the versions of the above noted Statements of Work in effect as of the date of sample analysis by the laboratory. Additionally, mass spectral negative proofs[1] are required where applicable, "clean" soil method blanks[2] for nonaqueous samples are not permitted, and laboratory internal chain of custody documentation is required.

II. Full Laboratory Data Deliverables - Non-USEPA/CLP Methods

These deliverables shall be the "Regulatory Format" data deliverables listed in the version of the Professional Laboratory Analytical Services contract issued by the N.J. Department of Treasury, Division of Purchase and Property in effect as of the date of sample analysis by the laboratory.

III. Reduced Laboratory Data Deliverables - USEPA/CLP Methods

Reduced laboratory data deliverables for USEPA/CLP analyses may be required when the "USEPA Contract Laboratory Program Statement of Work for Organic Analyses, Multi-Media, Multi-Concentration"; the "USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media, Multi-Concentration"; "USEPA Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, High Concentration"; and/or the "USEPA Contract Laboratory Program Statement of Work for Inorganics Analysis, Multi-Media, High Concentration" are employed. Data

generated via the other above noted Statements of Work may NOT be delivered in the reduced format.

A. Organics

All laboratory data deliverables required for USEPA CLP analyses for organics via the appropriate Statement of Work are the same as those listed above in the Full Laboratory Data Deliverables—USEPA/CLP requirements and must be submitted with the following exceptions:

1. Chromatograms of standards (calibrations) are not required.

2. Chromatograms and spectra for matrix spikes and matrix spike duplicates are not required.

B. Inorganics

The Reduced laboratory data deliverables required for USEPA CLP analyses for inorganics are all the Inorganics Data Reporting Forms as specified in the version of the above noted Statement of Work for Inorganics in effect as of the date of sample analysis by the laboratory.

IV. Reduced Laboratory Data Deliverables - Non-USEPA/CLP Methods

This attachment presents reduced laboratory data deliverables requirements for Non-USEPA/CLP Methods. The deliverable package is divided into six (6) sections:

1. General Requirements

2. GC/MS Requirements

3. GC Requirements

4. Metals Requirements

5. General Chemistry Requirements

6. Petroleum Hydrocarbons Requirements

1. General Requirements

A. The data deliverable package shall be bound and paginated with margins, bindings and of reproduction quality such that all pages are legible.

B. Title/Cover Page

The format for QA/QC documentation shall be simplified as much as possible for ease of review and reference. The report shall begin with a cover page that includes the laboratory certification number, if applicable, facility name, address and date of report preparation.

The report shall include a summary table that cross-references the field identification number to the laboratory identification number for each sample. This table is needed to locate laboratory information for specific field samples. Sample numbers used in the field are always different than those used in the laboratory and therefore shall be reconciled before submitting the results to Department.

C. Chain of Custody

The Chain of Custody (COC) shall ensure the secure and appropriate handling of samples from the site to the laboratory as well as the movement of the sample within the laboratory until analysis is completed. The COC remains with the samples at all times and bears the name of the person assuming responsibility of the samples and the date. The COC is acceptable when there are no lapses in sample custody.

D. Methodology Review

The Methodology Review shall list method numbers, with a detailed discussion of any modification.

E. Laboratory Chronicle

The laboratory chronicle shall detail actual sample holding times and specify the sample condition upon receipt at the laboratory (including sample temperature and pH when pH adjustment is required). Holding time begins at the time of sample collection.

F. Conformance/Non-Conformance Summary

A non-conformance summary shall be completed and signed by the laboratory. This summary states that the laboratory has reviewed the quality assurance and quality control measures for sample analysis. It identifies any deviations from the accepted practices or results.

2. GC/MS Requirements

A. Analytical Results Summary—An analytical results summary form shall be submitted for each sample and for each GC/MS analytical fraction (i.e., volatiles and semi-volatiles). Each form shall contain the following information: date sample

received, date sample extracted, date sample analyzed, sample weight/volume, sample moisture content, dilution factor, GC column used, list of analytes, method detection limit, practical quantitation level and detected analyte concentrations. In addition a separate form for tentatively identified compounds (TICs) shall be submitted for each sample and for each GC/MS analytical fraction. Each TIC shall be identified by compound name or class (if it can be determined) and CAS number along with its retention time and estimated concentration.

B. Tuning Results Summary—Tuning results for all initial and continuing calibrations that are associated with all samples shall be submitted for each GC/MS analytical fraction. Each form shall contain the following information: laboratory file ID, instrument ID, injection date and time, the m/e (mass to ion charge) listing for the key ions, the reported ion relative abundance, the ion abundance criteria and a listing of all standards, blanks, QC samples and field samples (including date and time of analysis) associated with the tune.

C. Method Blank Results Summary—An analytical results form shall be submitted for all method blanks associated with all field samples for all analytical fractions. Each form shall contain the information listed in Section 2A above, as well as a listing of all field and QC samples associated with each method blank. In addition, a separate form for TICs shall be submitted which contains the information listed in Section 2A above.

D. Calibration Summary—A summary of all initial and continuing calibrations that are associated with all samples and blanks shall be submitted for each GC/MS analytical fraction. The following information shall be provided for each initial calibration: instrument ID, calibration date and time, listing of standard concentrations used, laboratory file ID for each calibration standard, listing of all associated field samples, QC samples and blanks, retention times for each target analyte and surrogate compound, listing of the relative response factor (RRF) for each target analyte and surrogate compound, the average RRF for each target analyte and surrogate compound, and percent relative standard deviation for each target analyte and surrogate compound. The following information shall be provided for each continuing calibration: instrument ID, calibration date and time, date and time of the associated initial calibration, the standard concentration used, the laboratory file ID for the calibration standard, listing of all associated field samples, QC samples and blanks, retention times for each target analyte and surrogate compound, the average RRF for each target analyte and surrogate compound from the associated initial calibration, the RRF for each target analyte and surrogate compound from the continuing calibration and the percent difference for each target analyte and surrogate compound.

E. Surrogate Compound Recovery Results Summary—If required by the analytical method, a summary form shall be submitted which contains the following information for all field samples, method blanks and QC samples for each GC/MS

analytical fraction: sample identification number, sample matrix, surrogate compound names, concentration of surrogate compounds used, surrogate compound recoveries and QC limits for each surrogate compound.

F. Matrix Spike/Matrix Spike Duplicate Results Summary—If required by the analytical method, a summary form shall be submitted for each sample matrix and each GC/MS analytical fraction which contains the following: sample identification number for the sample selected for spiking, list of compounds being spiked, concentration of each spiked compound, matrix spike concentration, matrix spike percent recovery, matrix spike duplicate concentration, matrix spike duplicate percent recovery, relative percent difference and QC limits for percent recovery and relative percent difference.

G. Internal Standard Summary—A summary form shall be submitted which contains the following information for all standards, field samples, method blanks and QC samples for each analytical fraction: sample ID number, ID of laboratory calibration standard, internal standard compound names, concentration of internal standards compounds, retention times of each internal standard, area of each internal standard, and QC criteria (where applicable) for internal standard areas and retention times.

H. Chromatograms—The total ion chromatograms for all field samples and method blanks. All peaks on the chromatograms shall be identified as either an internal standard, surrogate compound, target compound or non-target compound. All peaks on a chromatogram shall also be associated with retention times, either directly on the chromatogram or identified and cross-referenced in tabular form.

3. GC Requirements

A. Analytical Results Summary—An analytical results form shall be submitted for each sample. Each form shall contain the information contained in Section 2A above.

B. Method Blank Results Summary—An analytical results form shall be submitted for all method blanks as well as a listing of all field and QC samples associated with each method blank. Each form shall contain the information contained in Section 2A above.

C. Standards Summary—A summary form containing GC standards information for all associated samples shall be submitted for both primary and confirmation (if applicable) analyses. This summary shall contain the following information: instrument ID number, GC column used and notation if primary or confirmation analysis, date and time of standard(s) analysis, listing of all associated field, QC and method blank samples, listing of target compounds, retention time windows of each target compound and calibration factor for each target compound.

D. Surrogate Compound Recovery Results Summary—If required by the analytical method, a summary form shall be submitted which contains the following information for all field samples, method blanks, and QC samples: sample identification number, sample matrix, surrogate compound names, concentration of surrogate compounds used, surrogate compound recoveries and QC limits for each surrogate compound.

E. Matrix Spike/Matrix Spike Duplicate Results Summary—If required by the analytical method, a summary form shall be submitted for each sample matrix which contains the information contained in Section 2F above.

F. Retention Time Shift Summary—If required by the analytical method, a summary form containing retention time shift results shall be submitted for both the primary and confirmation (if applicable) analyses. The form shall contain the following information: instrument ID number, GC column used and notation if primary or confirmation column analysis, name of retention time shift marker compound, list of all field samples, method blanks and QC samples, date and time of analysis of all field samples, method blanks and QC samples, percent difference of the retention time shift and QC limits for the retention time shift.

G. Chromatograms—The primary analysis chromatograms and confirmation analysis chromatogram (when applicable) for all field samples and method blanks shall be submitted. All peaks on the chromatogram attributable to target and surrogate compounds shall be identified as such along with the retention time for each peak. The reference standard chromatogram for all multi-peak target compounds (e.g., toxaphene, PCBs) for both the primary and the confirmation analysis (when applicable) shall also be submitted.

4. Metals Requirements

A. Analytical Results Summary—An analytical results form shall be submitted for each sample. Each form shall contain the following information: sample identification number (laboratory and/or field ID), sample matrix, date sample received, date sample analyzed, sample moisture content, dilution factor (if any), list of target analytes and detected analyte concentrations and method detection limits.

B. Blank Results Summary—A blank results form shall be submitted for all instrument calibration blanks and reagent blanks associated with all field and QC samples. Each form shall contain the following information: list of all target analytes, matrix of the reagent blank, concentration units of the reagent blank, reported concentration of all target analytes found in all calibration and reagent blanks and method detection limits.

C. Calibration Summary—A calibration summary shall be submitted for all initial calibration standards and check standards associated with field samples, blanks and QC samples. Each form shall contain the following information: list of all target analytes, the true concentration for the initial calibration standards, the reported (or found) concentrations for the initial calibration standards and check standards, the percent recovery for each initial calibration standard and check standard and the percent recovery QC limits for each target analyte. In addition, this form shall also list the method detection limit and instrument detection limit for each target analyte.

D. ICP Interference Check Sample Results Summary—If metals analysis is being conducted by ICP methodology, results of the interference check samples analysis shall be reported. The following information shall be reported: list of all target analytes in the interference check sample, the true concentration of analytes in the interference check sample, the reported concentrations of analytes found in the interference check sample for both the initial and final check samples analyses, the percent recovery of the target analytes found in the initial and final check samples analyses and the QC control limits for percent recovery values.

E. Spike Sample Results Summary—A summary of the spike sample analysis shall be submitted. The following information shall be reported: ID number of the sample chosen for spiking, sample matrix, the concentration of each spiked target analyte, the results of the unspiked sample analysis, the results of the spiked sample analysis, the percent recovery for each spiked analyte and the QC limit for percent recovery for each spiked analyte.

F. Duplicate Sample Results Summary—A summary of the duplicate sample analysis shall be submitted. The following information shall be reported: ID number of the original sample and the duplicate samples, sample matrix, results of the original sample analysis, results of the duplicate sample analysis, the relative percent difference of each target analyte for the original duplicate sample analyses and the QC limit for relative percent difference for each target analyte.

G. Laboratory Control Sample Results Summary—When specified by the analytical method, the results of the laboratory control (quality control) sample shall be submitted. The following information shall be reported: control sample matrix, list of all target analytes, the true concentration for each analyte in the control sample, the reported concentration for each target analyte in the control sample, the percent recovery for each target analyte and the QC limit for percent recovery for each target analyte.

H. Serial Dilution Summary—If required by the analytical method, a summary of the serial dilution results shall be submitted. The following information shall be reported: ID number of the original sample and the serial dilution samples, sample matrix, results of the original sample analysis, results of the serial dilution sample

analysis, the percent difference of each target analyte compared to the original analytes' results and the QC limit for percent difference for each target analyte.

5. General Chemistry Requirements

A. Analytical Results Summary—An analytical results form shall be submitted for each sample. Each form shall contain the following information: sample identification number (laboratory and/or field ID), sample matrix, date sample received, date sample analyzed, sample moisture content, dilution factor (if any), list of target analytes and detected analyte concentrations and method detection limits.

B. Blank Results Summary—A blank results form shall be submitted for all method blank samples associated with all field and QC samples. Each form shall contain the following information: list of all target analytes, matrix of the method blank, concentration units of the method blank, reported concentration of all target analytes found in all method blanks.

C. Spike Sample Results Summary—A summary of the spike sample analysis shall be submitted. The following information shall be reported: ID number of the sample chosen for spiking, sample matrix, the concentration of each spiked target analyte, the results of the unspiked sample analysis, the results of the spiked sample analysis, the percent recovery for each spiked analyte and the QC limit for percent recovery for each spiked analyte.

D. Duplicate Sample Results Summary—A summary of the duplicate sample analysis shall be submitted. The following information shall be reported: ID number of the original sample and the duplicate samples, sample matrix, results of the original sample analysis, results of the duplicate sample analysis, the relative percent difference of each target analyte for the original duplicate sample analyses and the QC limit for relative percent difference for each target analyte.

6. Petroleum Hydrocarbon Requirements

A. Analytical Results Summary—An analytical results form shall be submitted for each sample. Each form shall contain the information contained in Section 2A above. In addition, the identification of the GC instrument employed and the volume of extract injected shall be included.

B. Method Blank Summary—An analytical results form shall be submitted for all method blanks as well as a listing of all field and QC samples associated with each method blank. Each form shall contain the information in Section 6A above.

C. Standards Summary—A summary form containing GC standards information for all associated samples shall be submitted for all analyses. This summary shall contain the following information: instrument ID number, GC column used, date and

time of standard(s) analysis, volume injected, listing of all associated field, QC and method blank samples, identity of each analyte in the hydrocarbon standard and/or the identity of petroleum product standard(s), retention times of each analyte in the hydrocarbon standard (when applicable), retention times of the surrogates and internal standard (when applicable), retention times of pristane and phytane (when applicable), retention time windows for each surrogate (when applicable), response factors/relative response factors used for quantitative determinations, response factors/relative response factors of surrogates, and percent relative standard deviations/percent differences of the surrogates.

D. Surrogate Compound Recovery Results Summary—If required by the analytical method, a summary form shall be submitted which contains the following information for all field samples, method blanks, and QC samples: sample identification number, sample matrix, surrogate compound names, concentration of surrogate compounds used, surrogate compound recoveries and QC limits for each surrogate compound.

E. Matrix Spike Results Summary—If required by the analytical method, a summary form shall be submitted which contains the following information: ID number of the sample chosen for spiking, sample matrix, the concentration of each spiked analyte/petroleum product, the results of the unspiked sample analysis, the results of the spiked sample analysis, the percent recovery for each spiked analyte/petroleum product and the QC limit for percent recovery for each spiked analyte/petroleum product.

F. Quality Control Check Standard—If required by the analytical method, a summary form shall be submitted which contains the following information: ID number of the sample, concentration of each spiked analyte/petroleum product, the results of the spiked sample analysis, the percent recovery for each spiked analyte/petroleum product, and the QC limit for percent recovery for each spiked analyte/petroleum product.

G. Duplicate Sample Results Summary—A summary of the duplicate sample results shall be submitted which contains the following: ID numbers of the original sample and the duplicate sample, sample matrix, results of the original sample analysis, results of the duplicate sample analysis, the relative percent difference calculated from the original and duplicate sample results and the QC limit for the relative percent difference (when applicable).

H. Quantitation Reports—Instrument quantitation reports shall be submitted for all field samples, QC samples, method blanks and standards.

I. Chromatograms—Chromatograms for all field samples, QC samples, method blanks and standards shall be submitted. All surrogate, internal standard (when

applicable), pristane and phytane peaks on the chromatogram shall be identified along with the retention time for each peak.

1. A negative proof is a mass spectrum offered as evidence to support an analyst's decision to negate the presence of a contaminant which has been qualitatively identified and reported by the instrument's data system.

2. Method blanks for nonaqueous samples shall consist of performing the entire analytical procedure without any actual sample being present. The appropriate amount of sodium sulfate as specified in the current Statements of Work for Organics would be substituted as the "sample" for the semivolatile and pesticide/arochlor fractions.